

REMARKS

The second Office Action mailed on February 10, 2003 has been carefully considered and the Examiner's remarks are appreciated. Additionally, the Examiner's comments in the Advisory Action mailed on April 16, 2003 disallowing entry of Applicant's proposed amendments have also been considered. Accompanying this communication is a petition to extend the prosecution for two months and the appropriate fee.

Claims 1, 3, 5, 7, 8, 12, 14, 15 and 17 have been amended, and claim 2 was previously cancelled. New claims 20-22 have been added. Therefore claims 1, and 3-22 are presented for examination, with support for the amendments found in the Specification, Claims, and Drawings. In response to the second Office Action, Applicants respectfully request reconsideration in view of the above amendments and the following remarks.

Discussion of the Office Action

In the second Office Action, the Examiner rejected claim 7 under 35 U.S.C. 112, and rejected claims 1, 3-19 under 35 U.S. C. 103(a).

Discussion of Rejection under 35 U.S.C. §112

Applicants' claim 7 was rejected under 35 U.S.C. 112, first paragraph, as not being supported in the specification. This rejection has been overcome by cancellation of "at least" in line 2 thereof, as previously validated by the Examiner in the Advisory Action: "*Applicant's reply has overcome the following rejections: the rejection of claim 7 under 35 U.S.C. 112, first paragraph.*"

Discussion of Rejections under 35 USC §103

Claims 1, 3-13, 15 and 17-19 were rejected under 35 USC 103(a) as being unpatentable over U.S. Pat. No. 5,482,792 to Faita et al. Applicants have since amended independent claims 1, 5, and 15 to clarify the distinctions of the present invention with the prior art. In particular, claim 1 has been amended to include, among other items, “*...means for mounting and surface sealing a cell independently from other stack components*” (emphasis added). Similar to claim 1, claim 5 has been amended to include, among other items, “*said fuel cell being positioned in said cut-away section and peripherally mounted on and surface sealed to a surface of the rim section independently from other stack components*” (emphasis added). And claim 15 has been amended to include, among other items, “*...a plurality of fuel cells positioned in a corresponding one of said cell casing holder/plates and surface sealed to the corresponding cell casing/holder plate independently from other stack components*” (emphasis added).

As can be seen in Figures 1 and 2 of the present invention, the cell casing/holder plate (e.g. 15) is used to physically mount the cell (e.g. 16) directly thereon, such that the cell casing/holder plate alone cradles and supports the cell independent of other stack components. In this manner, the combined cell and cell casing/holder plate is treated as a unit in the subsequent steps for completing the stack construction, as shown in Figure 1. Second, and related to the independent cell mounting, the cell is also independently surface sealed to the cell casing/holder plate without the influence of other stack components. As described in the specification (e.g. page 3, lines 21-24) the cell casing/holder plate alone operates to “*separately seal a cell using conventional sealing materials such as ceramic, glass, or glass-ceramic based sealants.*” Thus, any influence from another stack component, e.g. a seal-inducing compression force exerted by an adjacent component, is not necessary to produce the seal. The adhesion

bond provided by such described sealants is sufficient to produce the seal and mounting between the cell and the cell casing/holder plate in a self-sufficient manner. Independence in mounting and surface sealing is evidenced, for example, in the exemplary embodiment of Figure 1 showing the cell completely recessed or tucked away when mounted within the cell casing/holder plate, and not just certain parts or sections of the cell. As a consequence, the cell itself does not directly affect or serve an active role in stack interconnection or structure; rather it is simply embedded within one of the structural components of the stack, i.e. the cell casing/holder plate.

In contrast to the present invention, each of the two gasket-frames (8) in Faita does not mount or surface seal a cell independently from other stack components. With respect to cell mounting, each gasket-frame is provided with a step (13) for receiving a single electrode therein. It is notable, however, that a single gasket frame is not capable of receiving the complete cell, i.e. the two electrodes (7) plus the electrolyte or ion exchange membrane (9). Because the member (9) remains beyond either one of the gasket-frames (8), both gasket-frames are required to secure the complete cell therebetween. Thus, the mounting of the cell to the gasket-frame is not accomplished independent of other stack components, and no teaching or suggestion is found in Faita to the contrary. Furthermore, in Faita, the cell is not capable of surface sealing to the gasket-frame independent of other stack components. Column 6, lines 39-46 states, "The sealing on the electrode side is ensured by the intrinsic resiliency of each gasket-frame/membrane pair. For this reason the gasket-frame is made of an elastomeric castable material. The required resiliency must be sufficient to permit a safe sealing under nonexcessive mechanical load to avoid that deformation under compression may obstruct channels (3) and (11) and that the membrane be excessively stressed in the peripheral area" (emphasis added). Thus Faita teaches the use of multiple stack components to exert a compression force on a resilient, elastomeric "gasket-frame/membrane pair" to produce sealing. Absent in Faita is any teaching or suggestion to produce the cell sealing, without

both same level to the left

Claim 2

such a compression force, which is clearly distinguishable from the present invention. It is thus respectfully submitted that the 103 based rejections for claims 1, 5, and 15 are now inappropriate in view of MPEP §2143.03 as follows in part:

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art."

It is also respectfully submitted that claims 3-4, 6-13, and 17-19 are now also allowable as being dependent on allowable base claims. With respect to claims 3 and 7 in particular, similar language to that amended into claims 1, 5, and 15 (e.g. "completely recessed," "mounting independent of other stack components," or "surface sealing independent of other stack components") has been included which are not taught or suggested by Faita, as previously discussed.

Claims 14 and 16 were rejected under 35 USC 103(a) as being unpatentable over Faita in view of U.S. Pat. No.4,997,726 to Akiyama et al. While the secondary Akiyama reference teaches flow channels 17, the combination of the Faita and Akiyama fail to teach or suggest all the limitations of claims 14 and 16, respectively, as discussed above. Furthermore, and in the alternative, it is submitted that claims 14 and 16 are now also allowable as being dependent on allowable base claims 5 and 15, respectively. It is submitted, therefore, that claims 14 and 16 are allowable as filed. Please note, however, that a grammatical error was corrected in original claim 14, not affecting the scope of the claim.

*Fairly
Reviewed*

Discussion of Rejections under 35 U.S.C. 102

Claims 1 and 3-14 were also rejected under 35 U.S.C. 102(b) as anticipated by Donelson (WO 98/57384). Similar to the preceding arguments presented above in reference to Faita, Donelson also

fails to describe, teach, or suggest, either expressly or inherently, all the claim limitations of independent claims 1 and 5, as amended, as required by MPEP §2131 as follows in part:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

In particular, while the Examiner, in support of his rejection, stated that "*Donelson teaches a solid oxide fuel cell system having... a cell casing/holder plate [34] having an aperture [36]...*" it is submitted that Donelson does not in fact describe, teach, or suggest such a separate cell casing/holder plate to which the cell is mounted and surface sealed independently from other stack components. As shown in Figures 1 and 2 of Donelson, a fuel cell 16 is sandwiched between a upper and lower sealing gaskets 48 and 44, respectively, with an insulating spacer 34 non-contactedly surrounding the fuel cell. Between the upper gasket and the fuel cell 16 is an electrically conductive compressible means (38) which exerts a compression force against the top of the fuel cell, for sealing purposes (see page 19, lines 25-29 and page 12, lines 10-17). It is notable however, that while the fuel cell contacts and rests on top of the lower seal gasket 44, it is actually mounted on and supported by the lower interconnect plate 14, with the lower seal gasket 44 merely sealing the space therebetween. Similar to the discussion in the Faita reference, the sealing in Donelson is also provided by exertion of a compression force by some other stack component, other than exclusively by a cell casing/holder plate as shown in the present invention. Thus it is clear that the fuel cell is not separately mounted and surface sealed independently from other stack components. Since this reference fails to teach each feature set forth in independent claims 1 and 5, it fails to support a rejection thereof under 35 USC 102, and thus should be withdrawn.

Furthermore, it is respectfully submitted that dependent claims 3, 4, and 6-14 are also in condition for allowance pursuant to MPEP §2131, as well as being dependent on now allowable base and/or intervening claims.

Summary

Having amended the claims and/or overcome Examiner's rejections as discussed above, Applicant respectfully submits that claims 1, and 3-22 are in condition for allowance. Applicants respectfully request allowance of claims 1, and 3-22.

In the event that the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, he is respectfully requested to initiate the same with the undersigned at (925) 422-7274.

Respectfully submitted,

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